

**9.4.6 Case Study, The Solaire, New York, New York  
(Apartments/Multi-Family)****Building Design**

Floor Area:	357,000 SF	Units:	293	Maximum Occupancy:	700
Floors:	27	Site Size:	0.38 Acres	Typical Occupancy (1):	578

Black-Water Treatment Facility (2)

**Shell****Windows**

Material: Double Glazed, Low-e, Thermal Breaks with Insulated Spacers

	<u>Operable windows</u>	<u>Fixed Windows</u>
Visual Transmittance	0.68	0.68
Solar Heat Gain Coefficient	0.35	0.35
U-Factor	0.47	0.41

**Wall/Roof**

	<u>Material</u>	<u>R-Value</u>
Exterior Walls:	Insulated brick and concrete block	8.4
Roof:	Roof top garden(green roof)	22.7

**HVAC**

Two direct-fired natural gas absorption chillers  
4-Pipe fan-coil units in individual apartments

**Power/Energy (3)**

PV System (4): 1,300 SF (76 custom panels) of west facing PV rated for 11 kW . These panels are integrated into the building façade.  
151 SF PV located in the entrance canopy. Rated for 662 W.  
286 standard PV modules mounted on the south and west walls. Rated for 21 kW.

Unit Average Electricity Consumption (5):	15,681	thousand Btu/year
Building Natural Gas Consumption (6):	104.1	thousand Btu/SF*year

**Predicted End-Use Consumption (thousand Btu/SF\*year)**

Heating	60.8	Plug Loads and Equipment	6.7
Cooling	20.7	Domestic Hot Water	7.9
Lighting	7.4	Cooking, Vertical Transportation, and Other	6.8
Fans/Pumps	11.4	<b>Total</b>	<b>121.7</b>

Note(s): 1) 84 hours per person weekly, 89 visitors weekly, 8 hours per visitor weekly. 2)30,000 gallon storage tank. Water is used for toilets and cooling tower. 3) Appliances in units are ENERGY STAR qualified. 4) PV system designed to handle 5% of building peak non-residential electrical load (i.e. corridor lighting). 5) Includes only electric that was submetered to each apartment. 6) 2007 building consumption.

Source(s): ASHRAE, High Performance Buildings, NYC's Living Lesson, p. 56-65, Summer 2008; USGBC, LEED Case Studies, The Solaire, <http://leedcasestudies.usgbc.org/overview.cfm?ProjectID=273>.